



## Section 5: Improve Phase/Box

### 5 - 6

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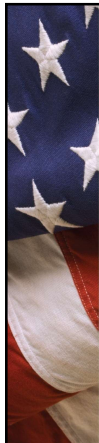
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## Learning Objectives

- List the major Box 5 – 6 activities for the A3 format
- List the major activities in the DMAIC Improve phase:
  - Generate potential solutions
  - Evaluate potential solutions
  - Pilot Solutions/Rapid Experiments
  - Implement the solutions
  - Prepare gate review
- Explain the critical role played by the Improve Phase/Solution Approach, Rapid Experiments in process improvement



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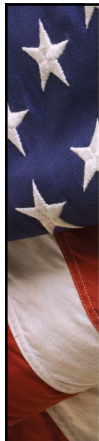
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## Box 5: Solution Approach

- Regardless of pathway, find solutions that address the root cause of the problem.
- If you do this \_\_\_\_\_, then “x” will occur \_\_\_\_\_.

5. Solution Approach	
If we.....	Then we can expect to.....
Provide tools to Hiring Managers for filling out packets	Hiring managers will be able to complete the packet correctly the first time
Develop a process map detailing the time expectation of the hiring process	Less interruptions and questions related to how long the process takes
Provide a real time view of the hiring process status	Hiring managers will always know their packet/posting status



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## Box 6: Rapid Experiments

- Plan each experiment
- Is the action related to the root cause?
- Measure results

Description	Who	Hypothesis	Actual	Benefit
Develop a sample WGLL packet for hiring managers and STD tool for completing packet	Carol M.	Hiring managers to have the appropriate tools to fill out and complete the hiring packet each time	95% of hiring packets complete and accurate	Reduced processing cost and time.
Detailed Processing Time Process Map	Margaret M.	Less interruptions and questions related to how long the process takes	No customer calls requesting status of their application	Increased staff satisfaction
Real Time view of processing status	Alex C.	Provide Real Time status throughout the process	Status available on-line. Less than 10% call related to status.	Increased staff satisfaction

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## Sustainable Solutions

Goal is to identify the "best known" solution

- Addresses root cause
- Eliminates/reduces potential/actual failure modes
- Eliminates/reduces wastes/barriers
- Leads to successfully achieving target state
- Is easy to do/follow/understand
- Can be easily monitored/measured

Tool book pg. 251

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## 5S and Visual Management

- 5S means the workplace is clean, there is a place for everything & everything is in its place
- May be a possible solution
- A simple & practical approach to waste & variability identification using techniques to organize a workplace
- Is owned by the people who work in the area

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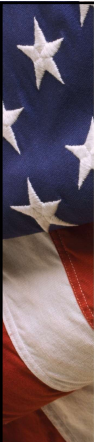
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### Benefits of 5S

- Increases productivity
- Improves process flow
- Decreases wait times
- Increases quality and safety
- Reduces costs
- Decreases defects and errors



www.Korpu-Arto.com



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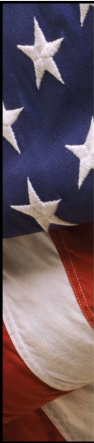
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### 5S

 <b>Sort</b>	 <b>Set for Flow</b>	 <b>Shine</b>	 <b>Standardize</b>	 <b>Sustain</b>
When in doubt, move it out – Red Tag technique	A place for everything and everything in its place that provides the best flow	Clean and inspect or inspect through cleaning	Make up the rules, follow and enforce them	Validate part of daily work and it becomes a habit



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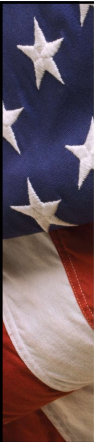
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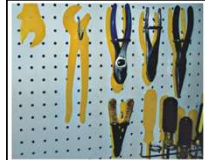

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### Visual Workplace Rules

- Visual cues to provide immediate indication of the process state
- May be combined with other lean techniques, such as 5S & error-proofing
- Allows staff to immediately assess operational states



Tool book pg. 237



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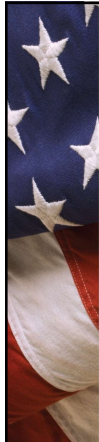
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## Visual Workplace Rules Continued

- Tools, Supplies, & equipment must be:
  - Easy to see
  - Easy to use
  - Easy to return
- Apply the 30-second rule
  - Items accessed at least once a month should be located within 30 seconds
- Defects must be visible at a glance
- Example: Item & item location is labeled & placed in order to facilitate easy use & return




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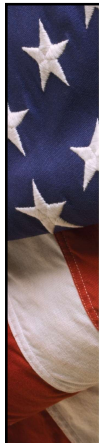
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## Brainstorming Techniques



1. Round Robin – involves moving around the table in turn & collect ideas
2. Shout out ideas as they come to the team and write on a flip chart
3. Silently have the team write down their ideas, then after a period of time sort into common categories
4. 7-Ways Approach – Thinking outside the box
5. Develop solutions for scenarios outside your project
  1. Example: how to get a cat out of the tree

Tool book pg. 27




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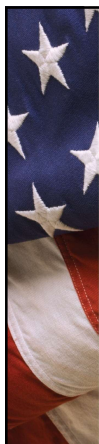
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## Rules for Brainstorming

- Make sure the team understands the exact issue, topic, or area of focus to keep on track
- Agree on a technique
- Record all ideas
- Build on existing ideas
- Strive for quality
- Organize, categorize, & evaluate only after the session is completed




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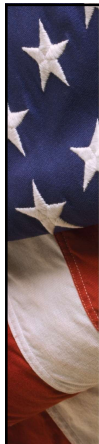
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## Rules of Brainstorming



- Question – clarify later
  - The goal is to keep many ideas coming
- Make judgements, verbal or visual, as ideas are being offered
- Dominate the session
- Stop when the page is full
  - Keep pushing for more ideas



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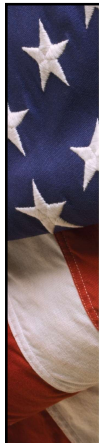
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## Exercise: Brainstorm & Prioritize Solutions (20 min.)

- In your group, brainstorm possible solutions for all root causes
  - Write your ideas on post-it notes, then place on flip chart
  - As a team, determine which solutions developed have the most value & are reasonable to implement
- Solutions should align with customer requirements, business needs, & regulations
- Suggested Solution Criteria:
  - What are the barriers to implementation?
  - Which type of solution will be fiscally responsible to implement?
  - Which type will deliver the most "bang for the buck?"
  - Which will meet the least resistance & be the easiest to implement?



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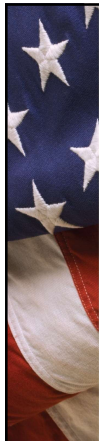
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## Failure Mode & Effects Analysis (FMEA)

- Structured approach to:
  - Evaluate the Risks/Failures of implementing the solutions
  - Estimate risk associated with specific failure causes
  - Prioritize actions to reduce risk of failure
  - Evaluate design validation plan or current control plan

Tool book pg. 270



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## FMEA: How to Perform

1. Review products, services, or process
2. Brainstorm, then sort possible failure modes (how a process, product, or service can fail)
3. List 1 or more potential effects
  1. Ask: If the failure occurs, what are the consequences
4. Assign rating for severity & occurrence
  1. Severity of a Failure: 1 – 10 (10 = most severe)
  2. Likelihood a failure will occur: 1 – 10 (10 = most likely to occur)

[illegible]

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## FMEA: How to Perform

5. List current monitoring & controls for each failure
6. Calculate a risk priority number (RPN)
7. Use the RPN to select high-priority failure modes
8. Plan to reduce or eliminate the risk of high-priority failure modes
9. Carry out the plans
10. Precompute the RPNs

Item	Function	Potential Failure Mode	Potential Effects or Failure	Severity	Potential Causes of Failure	Occurrence	Current Controls for Prevention	Detection	RPN	Recommended Action	Responsibility and Target Completion Date	Action Results			
												Action Taken	Score	Order	Rank
									0						0
									0						0



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## Small Tests of Change: PDSAs

Make many small scale, hypothesis driven, testable changes using PDSA.  
***It is a quick test of change.***



### Plan – an improvement

**Do – Test the improvement**

**Study – the effects by analyzing data**

**Act** – upon this information (adopt, adapt, abandon)



Tool book pg. 273

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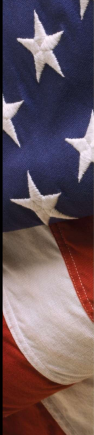
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## How to Pilot a Solution

**Phase 1: Plan**

- What needs to be piloted?
- Where will the pilots be run?
- Who will be involved?
- When or for how long will the pilots run?
- How will the pilots be conducted?




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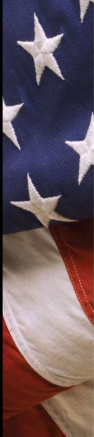
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## How to Pilot a Solution

**Phase II: Review Design**

- Make sure all the elements of the design are complete
- Make sure all the elements are well integrated & that interfaces between different parts of the design are tight
- Identify possible failure points & areas of vulnerability to be tested in the pilot?
- Review the pilot & implementation plans




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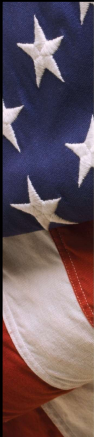
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## How to Pilot a Solution

**Phase III: Finalize design & implementation**

- Implement design changes identified in phase II.
  - If necessary, perform another design review
- Move to pilot testing & implementation
- Check for ripple effects & unintended consequences




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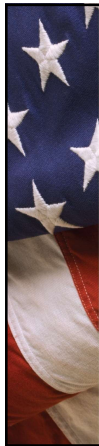
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## How to Pilot a Solution

**Phase IV: Evaluate the test & verify results**

- Review the outcome data to evaluate the design
- Communicate small victories to staff
- Improve on the design if the pilot demonstrates any weaknesses
- Create a comprehensive plan to reduce risk exposure



PDSA cycle  
improvement and  
verify the solution

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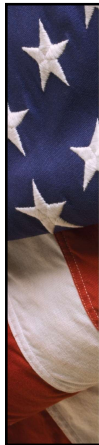
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
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## Example PDSA Template

Team: _____		Date: _____	
Describe the "Test of Change":			
<b>PLAN (Who? What? When? Where?)</b>			
1. Problem/Opportunity/Issue/Goal or Objective	2. Person Responsible	3. When to be done	4. Where to be done
1.			
2.			
3.			
4.			
5.			
What is the desired result of the "Test of Change"?			
<b>Measure of Success:</b>			
1.			
2.			
3.			
<b>DO (Carry out test of change)</b>			
Describe what was done:			
<b>STUDY (Collect Data and Analyze Results)</b>			
Summarize the outcomes of the test and what was learned:			
<b>ACT (Describe modifications due to test results) - Adopt, Adapt, Abandon</b>			
Continue PDSA cycle until no further modifications are necessary.			



PDSA cycle  
improvement and  
verify the solution

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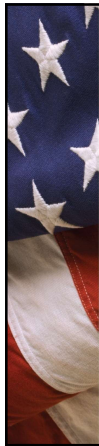
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## Box 5: Solutions Plan

If we control this...then we will achieve this....	Then we can expect to....	Effect on Metric 1	Effect on Metric 2



PDSA cycle  
improvement and  
verify the solution

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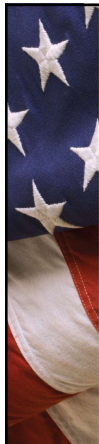
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### Box 6: Rapid Experiments

Description	Who	Hypothesis	Actual	Benefit

  
IMPROVE  
experiment and  
verify the solution

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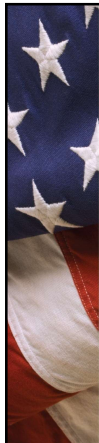
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### Exercise: Creating a Rapid Experiments Implementation Plan (25 minutes)

1. Complete Box 5 to create a solution approach to the permitting project
2. Develop your implementation plan to complete Box 6

  
IMPROVE  
experiment and  
verify the solution

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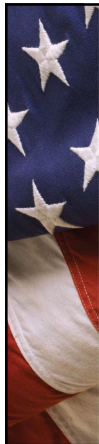
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### Improve Phase/Box 5 – 6 Deliverables

- Updated project Charter
- List of potential solutions
- Prioritized list of solutions
- Pilot or rapid experiment results
- Detailed implementation plan
- Completed tollgate/Boxes 5 – 6 completed

  
IMPROVE  
experiment and  
verify the solution

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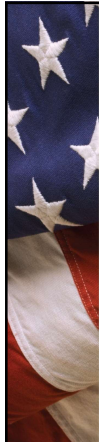
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## Section 6: Control/Sustain & Boxes 7 – 9




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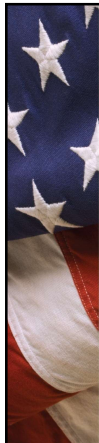
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## Learning Objectives:

- List the major Box 7 – 9 activities for A3 format
- List the major DMAIC activities in Control:
  - Establish process controls
  - Transition ownership
  - Replications & standardization
  - Project close out
- Explain the critical role played by the Control Phase/Boxes 7 – 9 in process improvement




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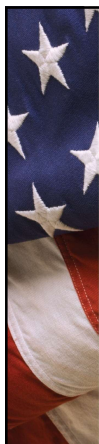
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## Control Phase

- Process improvements are not complete until the new & improved process is in control
- Control implies the following:
  - The process improvements have been realized & proven with follow up review (data)
  - The process owner has been handed off the improved process




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## Control Methods

- Create a set of tools to define the management of the process.
- Examples:
  - Standard Operating Procedures
  - Updated process maps
  - Training materials
  - Dashboards/Control Charts
  - Mistake proofing
  - Visual Controls
  - Audits



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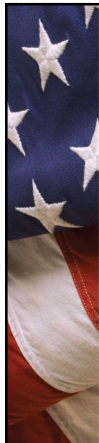
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## What are Dashboards?

- Combination of visual controls used to manage a process
- Show graphically the X's and Y's that your process owner measures per the control plan
- Ideally created with a central spreadsheet that is easy to update for your process owner

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## Poka-Yoke (Error-Proofing)

- Developed by Shigeo Shingo from Toyota Motors
- Tool to achieve zero defects
- Removing the possibility of human error
- Often used in combination with visual controls or quality checks





Cartridge won't go into slot for wrong color




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## Kanban Pull System


- A physical or visual trigger to fulfill work
- Identifies:
  - What
  - When
  - How much
  - Where



**Replenishment of  
what you need,  
when you need it,  
in the needed  
quantity**



Visual representation of a Kanban board. It shows a grid of yellow bins. The top row has four bins labeled 'STOCKING', 'STOCKING', 'STOCKING', and 'STOCKING'. The bottom row has four bins labeled 'STOCKING', 'STOCKING', 'STOCKING', and 'STOCKING'. Each bin contains a small white card with a barcode and text. The bins are arranged in a grid, with the top row having four bins and the bottom row having four bins. The bins are labeled 'STOCKING' and 'STOCKING'.



Control  
Masterplan  
Production

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## Box 7: Completion Plan

- Completion Plan should show:
  - What, Who, and by When
- Should be visually manageable
  - Ability to detect normal from abnormal within 5 seconds
- Should include the plan to:
  - **Communicate** the new process
  - **Train and Educate** the organization on the new process
  - **Audit** the new process, including any standard work



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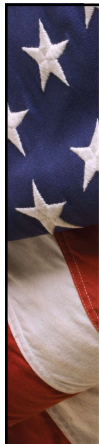
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### Box 7: Completion Plan

Box 7 – Completion Plan		
WHAT	WHO	BY WHEN
Integrate Hiring Checklist into tools and documentation	Billy J.	8/17/14
Develop and execute communication plan for new process	Tina T.	8/30/14
Create control plan for process.	Mick J.	9/11/14
Create education plan for staff	Rod S.	8/30/14
Create standard work for new process	Robin T.	9/7/14
Finalize changes for on-line status tool	Adam L.	8/15/14




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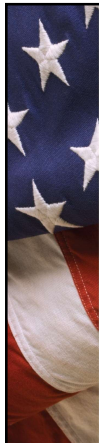
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### Exercise: Complete Box 7 (10 min)

What	Who	By When	% Completed	% Sustained




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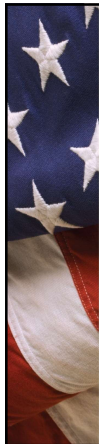
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### Box 8: Confirmed State

- What were the key accomplishments achieved during the project?
- What is the impact on the process?
- Success: Box 8 = Box 3
- If performance has not improved, then why? What was missed?




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## Box 8: Confirmed State

8. Confirmed State				
Pillar	Metric	CURRENT (BASELINE)	TARGET	CONFIRMED STATE
Quality	<ul style="list-style-type: none"> <li># of Missed Opportunities (due to RN staffing)</li> <li># of offers rejected (due to accepting other offer)</li> </ul>	<ul style="list-style-type: none"> <li>246</li> <li>16</li> </ul>	<ul style="list-style-type: none"> <li>123, &lt;50%</li> <li>8, &lt;50%</li> </ul>	<ul style="list-style-type: none"> <li>95</li> <li>3</li> </ul>
Cost	Hiring Cost per Vacancy	\$10,000	\$5,000	\$3,500
Delivery/ Satis./ Timeliness	<ul style="list-style-type: none"> <li>Hiring Manager Satisfaction</li> <li>Veteran Satisfaction</li> </ul>	<ul style="list-style-type: none"> <li>2 on Scale of 1 – 5</li> <li>72%</li> </ul>	<ul style="list-style-type: none"> <li>&gt;4</li> <li>&gt;90%</li> </ul>	<ul style="list-style-type: none"> <li>3</li> <li>82%</li> </ul>
People Human Dev.	Staff Turnover Rate	38%	19%, <50%	11%

- Does Box 8 = Box 3?
- Not always a process problem
- Maintain the gain




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## Exercise: Complete Box 8 (5 min)

- Develop a plan and tools to monitor your process
- Develop how to measure process performance, address data outliers, & initiate corrective actions to address data drift




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## Box 9: Insights

- What went well?
- What didn't go well?
- Lessons Learned
  - How should the way we work, or our standards, be adjusted to reflect what we learned
  - What do we need to learn next?




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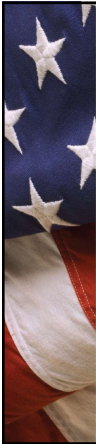
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### Box 9: Insights

#### 9. Insights

##### What Went Well?


- Impressed with everyone's willingness to work with each other
- Alarming, surprising, out of comfort zone, but in a good way
- Outside vendor on team
- Excellent learning experience
- Staff were very cooperative and are great
- Learning how complicated the process is
- Open minded staff and willing to accept change
- Ability to make changes in a week

##### What Didn't Go Well?

- Teamwork is needed across the board
- Missing key stakeholder, Perhaps the RPIW should have been postponed until able to participate

##### Lessons Learned

- We must constantly have focus/empathy for the Veteran
- The only barriers to defeating the challenges are "us"
- All Key customers must be



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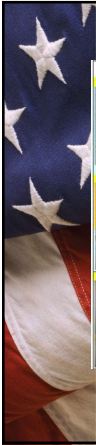
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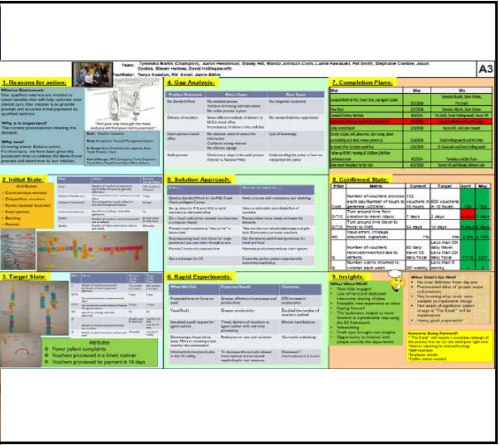
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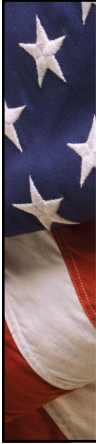
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### Plan to Transition to Process Owner

- Create a plan to transition formally to the process owner
- You cannot hand off the process until it has proven to be in control (Box 8 = Box 3)
- Set up a meeting for the transition & formally hand over the process
- Present your project to leadership
- Celebrate your team's accomplishments!





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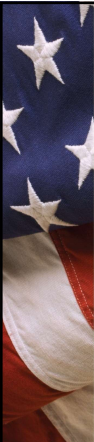
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### Control/Sustain, Boxes 7 – 9 Deliverables

- Updated project Charter
- Process control system
- Implemented solution
- Validation of benefit attainment
- Plan to transition to process owner
- Completed tollgate and boxes 7 - 9



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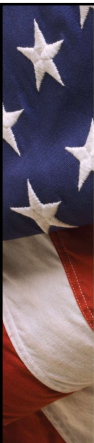
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### Course Wrap Up

- Lessons Learned
- Student Critiques
- LSS Pocket Guide
- Certificates of Completion

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